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DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

49 CFR Part 223

[Docket No. FRA-2020-0058; Notice No. 1]

RIN 2130-AC76

Safety Glazing Standards; Codifying Existing Waivers and Adding Test Flexibility

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: FRA proposes to amend its Safety Glazing Standards for exterior windows on railroad equipment to codify long-standing waivers, add a new testing option to improve consistency of glazing testing, and revise outdated section headings. The proposed changes would update and clarify existing requirements to maintain and, in some cases, enhance safety, while reducing unnecessary costs. Codification of the waivers as proposed is also consistent with the Infrastructure Investment and Jobs Act, and would enable FRA to more efficiently use its inspection resources.

DATES: Comments on the proposed rule must be received by [**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Comments received after that date will be considered to the extent practicable.

ADDRESSES: *Comments*: Comments related to Docket No. FRA-2020-0058 may be submitted by going to https://www.regulations.gov and following the online instructions for submitting comments.

Instructions: All submissions must include the agency name and docket number or Regulatory Identification Number (RIN) for this rulemaking. Note that all comments received will be posted without change to https://www.regulations.gov; this includes any personal information. Please see the Privacy Act heading in the **SUPPLEMENTARY**

INFORMATION section of this document for Privacy Act information related to any submitted comments or materials.

Docket: For access to the docket to read background documents or comments received, go to https://www.regulations.gov and follow the online instructions for accessing the docket.

FOR FURTHER INFORMATION CONTACT: Gary Fairbanks, Staff Director, Office of Railroad Safety, telephone: 202-493-6322, email: gary.fairbanks@dot.gov; or Michael Masci, Senior Attorney, Office of the Chief Counsel, telephone: 202-493-6037, email: michael.masci@dot.gov.

SUPPLEMENTARY INFORMATION:

Table of Contents for Supplementary Information

I. Executive Summary

Purpose of the Regulatory Action

FRA periodically reviews, and proposes amendments to, its regulations to identify ways to enhance safety and streamline and update regulatory requirements. Various Executive orders also encourage or require such reviews with an emphasis on cost-savings.[1] This proposed rule would maintain and, in some cases, enhance safety, while allowing FRA to make better use of its inspection resources, and reduce the overall regulatory burden on railroads.

Summary of the Regulatory Action

The Safety Glazing Standards (or part 223) contain minimum safety requirements for glazing materials in the windows of locomotives, passenger cars, and cabooses. FRA proposes to codify long-standing waivers[2] that have provided certain older railroad equipment relief from part 223. Through the waivers, FRA has generally provided relief from part 223's requirements for certain older railroad equipment operated at speeds not exceeding 30 miles per hour (mph) and used only where the risk of propelled or fouling objects (e.g., cinder blocks or other solid objects hanging from bridges, overpasses, or

[1] *See*, *e.g.*, Executive Order 13610, Identifying and Reducing Regulatory Burdens, 77 FR 28469, May 10, 2012; Executive Order 13563, Improving Regulation and Regulatory Review, 76 FR 3821, Jan. 21, 2011.

[2] FRA currently oversees 68 glazing-related waivers issued to 58 different railroads and involving equipment built or rebuilt before July 1, 1980. FRA has placed a list of these waivers in the docket. FRA monitors a railroad's compliance with each waiver and upon request, FRA reviews existing waivers for possible renewal every five years. Table D provides the number of waivers that will be reviewed for renewal during the next 10 years.

like structures) striking the equipment is low.[3] Codifying these waivers through this rulemaking proceeding[4] would continue a high level of safety and allow FRA better flexibility to use its inspection resources and reduce the regulatory burden on the railroad industry by eliminating the need to continue to use the waiver process for relief, while providing the railroad industry with regulatory certainty as to the applicability of part 223 to certain older equipment. Codifying these waivers is also consistent with the requirements of section 22411 of the Infrastructure Investment and Jobs Act (Pub. L. 117-58). Section 22411 requires the Secretary to review and analyze existing waivers issued under 49 U.S.C. 20103 that have been in continuous effect for a 6-year period to determine whether issuing a rule consistent with the waiver is in the public interest and consistent with railroad safety. After conducting the appropriate analysis, if the Secretary concludes that it would be in the public interest and consistent with railroad safety to initiate a rulemaking to incorporate into the regulations the relevant aspects of the waivers analyzed, section 22411 specifically authorizes the Secretary to initiate such a rulemaking.

Appendix A to part 223 (appendix A) contains the performance criteria and the testing methodology for the required glazing materials. Appendix A requires glazing materials in locomotives and passenger cars to be subject to two specific tests – ballistic impact and large object impact testing. The large object impact test requires the use of a certain-sized cinder block that is no longer manufactured and can be difficult to recreate accurately. Accordingly, FRA is proposing to allow the large object impact test to be performed using an easily obtainable steel ball. Permitting use of a steel ball that can be acquired with consistent properties that will not deform during testing also makes the test

[3] FRA accident and incident data from 1990 to the present confirms railroad equipment operating under waiver has sustained four acts of vandalism over the period with no injuries or casualties and the glazing performed satisfactorily.

[4] Notably, existing waivers could potentially be codified through the rulemaking process, as proposed here, or they could be codified through legislation.

more consistent and repeatable, which would increase reliability. Therefore, the alternative steel ball test would allow glazing manufacturers to adopt a test that would produce more consistent and accurate results to help ensure safety. Because, as discussed in Section III.B below, the steel ball test is at least equivalent to the existing cinder block test, safety would be maintained, if not enhanced, by the standardization of testing the steel ball test provides.

Finally, FRA proposes to revise several section headings in part 223 to replace terms that have become outdated. Since 1979, when FRA first published part 223, use of the terms "new" and "existing" in various section headings has become confusing. Accordingly, for clarity, FRA is proposing to amend the section headings to refer to the relevant compliance dates for each section.

Costs and Benefits of the Proposed Regulatory Action

The proposed rule would eliminate the need for railroads to submit waiver petitions (and repeated extensions of those waivers every 5 years) from part 223 for certain older railroad equipment, eliminate the Federal Government's need to review and approve the waiver petitions and extension requests, and reduce window glazing manufacturers' window glazing certification costs. FRA's estimates of cost savings for the NPRM are shown in the table below. FRA estimates there will be no costs associated with implementing the proposed rule.

Summary of Total Cost Savings over the 10-Year Period (2020 Dollars)[5]

Entity	Undiscounted	Present Value		Annualized	
		3%	7%	3%	7%
Railroad (Waiver Submissions)	$44,000	$37,000	$30,000	$4,300	$4,200
Manufacturer (Steel Ball Option)	$74,800	$63,800	$52,500	$7,500	$7,500

[5] In this document, both total and annualized figures have been rounded to improve clarity.

Government (Review Savings)	$1,000,200	$844,000	$685,000	$99,000	$97,500
Total Cost Savings	$1,119,000	$944,800	$767,500	$110,800	$109,300

II. Background

A. Existing Glazing Requirements

In the 1970s, railroads recorded many incidents involving propelled or fouling objects (*e.g.*, stones, cinder blocks, and bullets) striking railroad vehicle windows, resulting in injuries to railroad employees and passengers.[6] Some of the incidents were caused by intentional acts of vandalism (*e.g.*, thrown rocks and stones); others resulted from routine rail operations (*e.g.*, ballast or debris kicked-up by oncoming trains); and some were believed to be accidental (*e.g.*, stray bullets from nearby hunting).

In 1979, FRA issued part 223 to protect railroad crew members and passengers when train windows are struck by propelled or fouling objects. Part 223 requires exterior windows in locomotives, cabooses, and passenger cars to be equipped with glazing that meets certain technical specifications designed to protect the vehicles' occupants from injury if a window is impacted by an object.[7] Appendix A outlines the criteria for certifying a window's glazing and ensures that glazing materials in rail equipment are significantly more resistant to impact than ordinary window glass or safety glass.

Part 223 requires all equipment built or rebuilt after June 31, 1980, to be equipped with certified glazing. With certain exceptions, part 223 also phases in requirements for equipment built or rebuilt prior to July 1, 1980. As a result, almost the entire railroad fleet is equipped with certified glazing.

The exceptions from part 223 include those for some older railroad equipment that is still in use today. Specifically, FRA's 2016 amendments to part 223 exclude

[6] *See* 44 FR 77348, Dec. 31, 1979.
[7] *Id.*

equipment under § 223.3(b)(3) that is more than 50 years old and, except for incidental freight service, used only for excursion, educational, recreational, or private transportation purposes.[8] The amount of remaining older equipment that was not built or rebuilt with certified glazing prior to July 1, 1980, and is not excepted under § 223.3(b)(3), is very small.[9] As discussed below, however, much of this older equipment continues to operate today subject to individual waivers from part 223's requirements.

B. FRA Waiver Process and Glazing Waivers

FRA has, in various instances, exercised its delegated authority to waive compliance with its regulations.[10] As noted above, FRA currently oversees 68 glazing-related waivers. FRA's waiver process is well established. FRA implemented this authority by issuing the rules under subpart C to 49 CFR part 211, providing a process for regulated entities to submit, and FRA to respond to, waiver petitions. Under part 211, each properly filed petition for a waiver of a safety rule, regulation, or standard is referred to FRA's Railroad Safety Board (Safety Board) for decision.[11] The Safety Board's decision is typically rendered after a notice is published in the *Federal Register* and an opportunity for public comment is provided.[12] The Safety Board may grant a waiver request if it finds that doing so is "consistent with railroad safety and in the public interest."[13] If the Safety Board grants a waiver petition, it may impose conditions on the grant of relief to ensure safety.

Activity under a waiver of regulatory compliance may generate sufficient data and experience to support an expansion of its scope, applicability, and duration. A

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[8] 81 FR 6775, Feb. 9, 2016. 49 CFR 223.3(b)(3).
[9] FRA estimates the remaining equipment that would be affected by this rule is very small as all of the equipment is owned and operated by the 58 railroads currently operating under 68 waivers. Some railroads have been granted more than one part 223 waiver.
[10] 49 U.S.C. 20103 ("The Secretary [of Transportation] may waive compliance with any part of a regulation prescribed or order issued under this chapter if the waiver is in the public interest and consistent with railroad safety."). The Secretary has delegated this authority to FRA, 49 CFR 1.89(a).
[11] 49 CFR 211.41(a).
[12] 49 CFR 211.41(b).
[13] 49 U.S.C. 20103(d).

waiver's success and its continued expansion may further warrant consideration of regulatory codification. Codifying a waiver,[14] and thereby making its exemptions and requirements universally applicable, results in industry cost-savings larger than from the waiver alone.

Since 1998, FRA has granted conditional relief from part 223 to approximately 200 small railroads that operate older equipment under certain circumstances (*i.e.*, low speeds and in geographical locations with no history of broken windows and low risk of future vandalism to railroad equipment). Currently 58 railroads continue to operate under 68 such waivers. Some railroads operate under more than one waiver. In granting these waivers, the Safety Board's review of available records found that the specific railroad operations and operating environment of each railroad demonstrated no history of injuries resulting from windows breaking on their equipment and low risk of any future injuries (*i.e.*, no or few reported incidents of vandalism, no history of windows being broken from propelled or fouling objects). In addition, the Safety Board consistently found that, due to rising prices for materials and labor, and modifications that are necessary to adapt the window frames in the older equipment to support the increased thickness and weight of glazing in modern window designs, requiring railroads with older equipment and limited operations (such as those railroads that are party to the existing glazing waivers referenced in footnote 9) to install certified glazing would be cost-prohibitive and of limited benefit. See the discussion of Executive Order 12866 in Section IV.A below.

While monitoring implementation of these waivers, FRA reviewed all incident reports from railroads operating under the waivers and identified no injuries that would have been prevented or mitigated by part 223 certified glazing. Given the rail industry's long-term success in safely operating under these waivers, FRA is proposing to incorporate the regulatory flexibility provided by the waivers into part 223. This change

[14] *See* FN 4.

would eliminate the need for further waivers and the associated employee hours spent on their documentation and renewal every five years, as well as remove any industry uncertainty as to whether FRA would renew the waivers.

III. Overview and Technical Discussion of Proposed Requirements

A. Proposal to Exclude from Part 223 Older Equipment Operated at Only Low Speeds in Locations with Low Risk of Objects Striking Equipment

FRA has historically granted waivers from part 223 on a case-by-case basis, finding that locations and operations where there is a low risk of propelled or fouling objects striking the equipment, and the equipment travels at relatively slow speeds, could be used as a basis for providing the relief.[15] When deciding individual waiver requests, FRA has historically considered the risks along a railroad's particular operating route, along with the speed limitations on the equipment, to evaluate each individual railroad's request.

The risk of injury to a railroad employee or passenger from objects impacting rail vehicle windows is diminished at lower speeds, regardless of whether the windows are protected with certified glazing. As a result, FRA has generally limited the speeds at which equipment, subject to waivers from part 223, may travel to between 10 and 30 mph, depending on the operating conditions of the petitioning railroad and the class of track over which the equipment is operated.[16] FRA recognizes that although non-compliant glazing may fail at operating speeds of 30 mph or lower, the lower speeds will minimize the risk of injuries occurring.

Impact testing at 30 mph, for other than ballistic impacts, has been the benchmark for certified glazing since part 223 was established. The large object impact test in appendix A requires a 24-lb cinder block of specific dimensions to move at an impact

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[15] 44 FR 77348, Dec. 31, 1979.

[16] In a few instances, FRA has also granted relief from part 223 and allowed the subject equipment to operate at speeds above 30 mph, but those approvals are based on analysis of the unique operations involved.

speed of 44 feet per second (fps), which is equivalent to 30 mph. To conduct the test, appendix A requires a cinder block to move dynamically towards a static piece of glazing. This scenario approximates actual occurrences where trains have struck a static cinder block hanging from a bridge or overpass.

In addition to striking cinder blocks or other objects fouling the movement of a train at the height of its windows, there is the potential for vandals to throw projectiles (rocks, stones, *etc.*) at oncoming trains or for debris from the ground to impact the windows of rail vehicles. FRA conducted an analysis to determine whether projectiles thrown at or flying into Type I glazing[17] could present a more significant risk and be more damaging than a train window striking a static 24-lb cinder block. The governing equation for this analysis is Equation 1 below:

$$\frac{1}{2}m_{cinder\ block}(v_{train} + v_{cinder\ block})^2 = \frac{1}{2}m_{projectile}(v_{train} + v_{projectile})^2$$

Equation 1

Equation 1 sets the kinetic energy of a cinder block moving at a given velocity to the kinetic energy of a projectile moving at a different (and greater) velocity than the cinder block. In Equation 1, $m_{cinder\ block}$ is the mass of the cinder block; v_{train} is the velocity of the train; $m_{projectile}$ is the mass of the propelled object, and $v_{projectile}$ is the velocity of the propelled object. Note that the velocity of the train is added to the velocity of the projectile because the train and projectile are travelling in opposite directions and, therefore, their velocities are additive.

For this analysis, the velocity of the cinder block is assumed to be zero as it represents a static cinder block hanging from a bridge or similar-type overhang. Therefore, Equation 1 reduces to Equation 2 below:

[17] Type I glazing is the type of glazing generally required to be installed on end facing windows. Under part 223, Type II glazing is required to be installed on side facing windows. Part 223's requirements for Type I glazing are more stringent than those for Type II glazing because of the more prominent location of the glazing and to account for the more direct effects of longitudinal speed.

$$\frac{1}{2}m_{cinder\ block}{v_{train}}^2 = \frac{1}{2}m_{projectile}(v_{train} + v_{projectile})^2$$

Equation 2

Solving for the projectile velocity ($v_{projectile}$) results in Equation 3 below:

$$v_{projectile} = \sqrt{\frac{m_{cinder\ block}}{m_{projectile}}{v_{train}}^2} - v_{train}$$

Equation 3

The mass of the cinder block ($m_{cinder\ block}$) is 24 lbs.[18] In addition, the velocity of the train (v_{train}) is 30 mph. Plugging these values into Equation 3 results in Equation 4 below:

$$v_{projectile} = \sqrt{\frac{24}{m_{projectile}}30^2} - 30$$

Equation 4

Now a projectile mass ($m_{projectile}$) can be entered into Equation 3, and the result is the projectile velocity ($v_{projectile}$) needed to throw the projectile at an oncoming train travelling at 30 mph to impact with the same kinetic energy as a train travelling at 30 mph impacting a static 24-lb cinder block. Table 1 puts forth the mass of different projectiles ($m_{projectile}$) and the resulting projectile velocity ($v_{projectile}$).

Table 1

Projectile Mass (pounds)	**Projectile Velocity (mph)**	**Projectile Velocity (fps)**
10	16.5	24.2
5	35.7	52.4
0.3125	232.9	341.6

As Table 1 demonstrates, a 10-lb projectile and a 5-lb projectile would have to be thrown at 16.5 mph (24.2 fps) and 35.7 mph (52.4 fps), respectively, to generate the same impact energy as a train travelling at 30 mph striking a static 24-lb cinder block.

To give an idea of the arm strength required to generate these velocities with such objects, the last line in Table 1 represents a weight of 5 ounces (0.3125 pounds), which is

[18] Note that a pound (lb) is not technically a unit of mass but is sufficient for this calculation. The conversion could be made to the International System of Units (SI units) to complete the calculation; then, the result could be converted back to US units. However, for the present calculation, the same result is obtained whether or not this conversion to SI units is performed.

equivalent to the weight of a baseball. A baseball would have to be thrown at approximately 232.9 mph (341.6 fps) at an oncoming train travelling at 30 mph to generate the equivalent energy of a train travelling at 30 mph impacting a static 24-lb cinder block. Professional baseball pitchers have never recorded pitches in excess of 110 mph. Therefore, FRA concludes that a velocity of 232.9 mph cannot be attained by a vandal using only arm strength. Similarly, it is likely that not many people have the arm strength necessary to achieve a velocity of 35.7 mph (52.4 fps) throwing a 5-lb projectile or a velocity of 16.5 mph (24.2 fps) throwing a 10-lb projectile. Based on this analysis, FRA has concluded that a projectile thrown at an oncoming train travelling at 30 mph would impact the train with less energy than if the train traveling at the same speed impacts a static cinder block. Therefore, the safety risk for equipment traveling at 30 mph or lower and struck by a thrown object is relatively low. A 30-mph maximum allowable speed also correlates with FRA's maximum allowable speed for FRA Class 2 track, as outlined in 49 CFR 213.9, which makes it consistent with the operational realities of many small railroad operations.

For the reasons explained above, in this NPRM, FRA proposes to exclude from compliance with part 223 all locomotives, cabooses, and passenger cars built or rebuilt prior to July 1, 1980, that are operated at speeds not exceeding 30 mph, and are used only where the risk of propelled or fouling objects striking the equipment is low. To implement this rule as proposed, FRA believes the railroads are well-suited to determine whether there is low risk in operations, because they should know the history in those areas and can continuously monitor for incidents and potential risks. Currently, during the waiver process, FRA investigates to determine the risk of propelled or fouling objects striking equipment in operation. FRA's investigations typically involve physical inspections of the route over which the equipment operates, talking to railroad officials and employees, and in some cases, requesting information from local law enforcement.

FRA expects that if this proposed rule is adopted and a railroad initially determines its equipment and operations meet the proposed exclusion from part 223, but subsequently the railroad (or FRA) becomes aware of incidents of propelled or fouling objects striking the windows of railroad equipment in operation, the railroad will take appropriate action to install certified glazing or otherwise mitigate the risk of damage to the rail equipment windows.

B. Proposal to Provide Alternative to Existing Large Object Impact Test Requiring Use of a Cinder Block

FRA first became aware in the early 2000s that cinder blocks of the weight and dimensions appendix A requires (*i.e.*, cinder blocks weighing a minimum of 24 pounds with dimensions of 8 inches by 8 inches by 16 inches) for the large object impact test were no longer being manufactured and accordingly becoming harder for the glazing manufacturing and railroad industries to find. These industries therefore began relying on cinder blocks originally manufactured to non-conforming dimensions and weight that then have to be customized to the required dimensions and weight, and continue to do so today. Having to customize non-conforming cinder blocks to part 223's requirements is not only inconvenient and costly to glazing manufacturers, it also introduces potential inconsistencies because different manufacturers independently modify each cinder block to conform to the required test specification. In addition, even if conforming cinder blocks were widely produced and available, each cinder block typically can be used only once during testing, because the required impact on the corner of the block damages it, rendering it non-conforming for further testing.

To address the growing issue of the unavailability of the cinder blocks required for testing under appendix A, FRA asked the Railroad Safety Advisory Committee

(RSAC) to evaluate the issue.[19] RSAC recommended, and FRA agreed, that further research should be conducted to determine whether a steel ball could be a potentially suitable alternative test object to use instead of the required cinder block. FRA tasked the John A. Volpe National Transportation Systems Center (Volpe Center) to conduct this research. The Volpe Center retained Parsons Brinckerhoff Quade & Douglas, Inc., in association with ETC Laboratories, to conduct a testing program for railroad vehicle glazing to analyze the use of a steel ball for the end facing (Type I) glazing large object impact test standard. The goal was to determine whether an impact test using a steel ball could be at least as stringent as the existing impact test using a cinder block to certify glazing under part 223.

The main features of the test were the use of: (1) a solid 12-lb steel ball as the impact object; (2) a minimum impact speed of 62.5 fps; and (3) pass-fail acceptance criteria defined by no penetration of a witness plate, with a minimum of 3 out of 4 passes required to define a pass. Using the equation for kinetic energy, FRA determined that a 12-lb steel ball traveling at 62.5 fps has the same kinetic energy as a 24-lb cinder block traveling at 44 fps, as appendix A currently requires.

The 62.5 fps value for the velocity of the steel ball was arrived at by using the following equation which sets the kinetic energy of the cinder block equal to the kinetic energy of the steel ball:

$$\frac{1}{2}m_{cinder\ block}v_{cinder\ block}{}^2 = \frac{1}{2}m_{steelball}v_{steelball}{}^2$$

Equation 5

In Equation 5, $m_{cinder\ block}$ represents the mass of the cinder block, $v_{cinder\ block}$ represents the velocity of the cinder block, $m_{steelball}$ represents the mass of the steel ball,

[19] RSAC was established to provide a forum for exploring railroad safety issues and developing recommendations on rulemakings and other safety program issues. It includes representation from all FRA's major stakeholder groups, including railroads, labor organizations, suppliers, manufacturers, and other interested parties.

and $v_{steelball}$ represents the velocity of the steel ball. Solving for the velocity of the steel ball results in the following equation:

$$v_{steelball} = \sqrt{\frac{m_{cinder\ block}}{m_{steelball}} v_{cinder\ block}{}^2}$$

Equation 6

In Equation 6, plugging in 24 lbs for the mass of the cinder block, 44 fps for the velocity of the cinder block, and 12 lbs for the mass of the steel ball results in a value of approximately 62.5 fps for the velocity of the steel ball.[20]

North American Specialty Glass (NASG) provided five different types of Type I glazing samples for testing, which included two-ply and three-ply glazing with and without spall shields.[21] For each test, the samples were mounted in a fixture and a witness plate, consisting of an aluminum sheet having a 2-millimeter thickness mounted in another frame behind the samples for gauging the relative potential harm of any spall resulting from each impact. The study confirmed the steel ball impact test, using a 12-lb steel ball as the large object impact test object and at an impact speed of a minimum 62.5 fps, can be practically achieved in the laboratory, and as proposed in this rulemaking, can be used as an equivalent alternative to the existing cinder block impact test. Further, use of a 12-lb steel-coated shot put ball instead of a solid steel ball, was also acceptable based on the testing criteria used for the solid steel ball. The Volpe Center's complete report of these tests and resulting findings is available for review in the docket to this proceeding.[22]

Interestingly, the three models/types of glazing specimens tested without a spall shield were not able to pass the 12-lb steel ball test at a speed of 62.5 fps. These three types of glass specimens were Type I certified, meaning they had previously passed the

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[20] *See* FN 18. For the present calculation, the same result is obtained whether or not a conversion to SI units is performed.

[21] A spall shield is a film or coating applied over the glazing material to provide additional protection from spalling (*i.e.,* fragmentation or splintering of the glazing material) during impact with an object. Part 223 does not require certified glazing to be equipped with a spall shield.

[22] Parsons Brinckerhoff, "Railroad Vehicle Window Glazing Large Object Impact Test," May 2006.

standard 24-lb cinder block test. Yet, even though the velocity of the 12-lb steel ball is adjusted to obtain the same kinetic energy as the 24-lb cinder block, there are other factors that must be considered regarding equivalency of the tests. For example, unlike a steel ball, a cinder block is not a symmetrical object. During a test, the cinder block can hit the target glazing on one of its twelve edges, or it can hit directly on one of its six faces. If the cinder block impacts the glazing on one of its faces, there is a much larger surface area coming into contact with the glazing material, so the force per unit area is lower than when only the edge of the cinder block impacts the glazing.

A steel ball impact is much more uniform due to the inherent symmetry of the steel ball. Additionally, the contact area created when a steel ball impacts the target glazing is likely even smaller than the contact area created when the edge of a cinder block impacts the target glazing. This creates a scenario where the contact area is quite small and, therefore, the force per unit area is high. This small contact area created by use of a steel ball differs from the variable, but typically larger, contact area created when a cinder block impacts the target glazing. This likely was the cause of the three models/types of glazing specimens to pass the steel ball test only with spall shields even though they passed the cinder block test without spall shields when certified as FRA Type I glazing. In other words, the results indicate the steel ball test is potentially a more stringent test than the cinder block test. Therefore, safety will not be diminished if the steel ball test is used as opposed to the existing cinder block test.

Given the more stringent nature of the steel ball test, FRA finds that the steel ball alternative test option is appropriate for both Type I (end facing) and Type II (side facing) glazing large object impact testing under part 223. Accordingly, FRA is proposing to amend appendix A to provide the option to use a 12-lb steel ball as an alternative to a 24-lb cinder block for large object impact testing when certifying glazing under part 223. As noted above, the requirements for Type I glazing are more stringent

than those for Type II glazing, because of the more prominent location of the glazing and to account for the more direct effects of longitudinal speed. Therefore, the Volpe Center research, even though it focused on Type I glazing, served to validate use of the steel ball for Type II glazing large object impact testing. Use of Type II glazing subject to a comparable steel ball testing regimen should be at least as safe as use of Type II glazing subject to the existing cinder block testing process.

While FRA is not proposing any substantive change to the existing cinder block test, it specifically requests comments on whether the test should be retained, or whether it is now obsolete and should be replaced with the steel ball test. To preserve either option, this NPRM proposes to incorporate by reference the ASTM International (ASTM) specifications C33/C33M-18 and C90-16a. The previous versions of these specifications are currently referenced in appendix A as C33L and C90, respectively. The portions of these specifications that are relevant to the large object impact test have not significantly changed and would continue to be used to ensure proper cement construction and integrity for the cinder blocks.

Use of the steel ball would increase consistency, provide flexibility, and save cost during large object impact testing, leading to more repeatable, reliable, and efficient testing. FRA is not aware of any other suitable object that could be used to establish an impact test equivalent to the cinder block test and provide the same benefits as the steel ball for equipment subject to the requirements in appendix A. Nonetheless, FRA invites comment about alternative objects that could be used for such impact testing and whether another performance standard is feasible.

FRA notes that, in 2018, FRA established impact testing requirements for certifying glazing for passenger equipment operating at speeds up to 220 mph in a dedicated right-of-way without grade crossings.[23] The requirements for this Tier III

[23] 49 CFR 238.721, 83 FR 59182 (Nov. 21, 2018).

passenger equipment in 49 CFR part 238 were based on recommendations developed for RSAC by a subgroup of glazing experts (the Tier III Cab Glazing Task Group) identified by the Passenger Safety Working Group's Engineering Task Force.[24] These recommendations were developed to address modifications to the glazing regulations for very high-speed, Tier III passenger operations. An informative aspect of this effort was the evolution of surrogates used for large object impact testing throughout the world. Given the substantial research conducted by global standards organizations on the topic, it was recommended that FRA adopt modified criteria based on the relevant elements of Euronorm (EN) 15152 and International Union of Railways (UIC) 651, specifically the nature of the projectile and its mass, shape, and composition, along with other specifications for test conditions (*e.g.*, impact angle, temperatures, etc.) to ensure scientific controls and repeatability.[25]

FRA makes clear that the language proposed in this NPRM is appropriate for broad application to both freight and passenger equipment operated at conventional speeds. Nonetheless, FRA recognizes that the proposed language differs from that adopted in part 238 to address concerns associated with very high-speed, Tier III rail operations. FRA therefore seeks comment on the appropriateness and utility of applying part 238's Tier III glazing requirements more broadly to the degree that certain aspects of the Tier III glazing requirements might be considered for application to this rulemaking and, if so, which aspects.

IV. Section-by-Section Analysis

This section-by-section analysis is intended to explain the rationale for each revised or new provision of the proposed rule. The proposed regulatory changes are organized by section number. FRA seeks comments on all proposals made in this

[24] 81 FR 88017 (Dec. 6, 2016).
[25] *Id.*

NPRM.

Section 223.3 Application

Section 223.3 sets forth the scope and applicability of part 223. Existing paragraph (b) excludes from part 223's applicability certain types of equipment and operations. FRA proposes to add a new paragraph (b)(5) to exclude locomotives, cabooses, and passenger cars built or rebuilt prior to July 1, 1980, that are operated at speeds not exceeding 30 mph, and used only where there is low risk of propelled or fouling objects striking the equipment. The July 1, 1980, date corresponds to the original application date of part 223 to then-existing equipment, as discussed below under §§ 223.11 through 223.15, which with certain exceptions led to phasing in requirements for this equipment. Risk factors include reported incidents of propelled or fouling objects striking rail equipment, or infrastructure conditions or other operating environment conditions that have led or are likely to lead to objects striking rail equipment in operation. Paragraph (b)(5) would provide that risk is presumed low, unless the railroad operating the equipment has knowledge, or FRA makes a showing, that specific risk factors exist. FRA would determine whether there is low risk primarily based on FRA's observations during routine inspections and from any reported incidents of propelled or fouling objects striking rail equipment in operation. FRA expects the operating railroad to inform FRA of any such incidents known to the railroad. If FRA has reason to believe there have been incidents of propelled or fouling objects striking equipment in operation, FRA may investigate further. As part of its investigation, FRA may contact local law enforcement for more information, in determining the risk level.

Section 223.9 Requirements for Equipment Built or Rebuilt After June 30, 1980

The current heading for this section is "Requirements for new or rebuilt equipment." FRA is proposing to revise the section heading to "Requirements for equipment built or rebuilt after June 30, 1980" to reflect the requirements of the section

more accurately. When the Safety Glazing Standards final rule was published in 1979, the date June 30, 1980, was chosen to identify equipment built or rebuilt after that date as fully subject to this section's requirements. With the passage of time, referring to equipment built after June 30, 1980, as "new" equipment is potentially confusing. FRA therefore proposes to amend the section heading for clarity by referring to the actual compliance date for equipment subject to this section, including rebuilt equipment.

Section 223.11 Requirements for Locomotives Built or Rebuilt Prior to July 1, 1980

The current heading for this section is "Requirements for existing locomotives." FRA is proposing to revise the section heading to "Requirements for locomotives built or rebuilt prior to July 1, 1980" to reflect the requirements of the section more accurately. When the Safety Glazing Standards final rule was published in 1979, the date July 1, 1980, was chosen to identify equipment built or rebuilt prior to that date as subject to different, phased-in requirements. With the passage of time, referring to equipment built or rebuilt prior to July 1, 1980, as "existing" equipment is potentially confusing. FRA therefore proposes to amend the section heading for clarity by referring to the actual compliance date for equipment subject to this section. For the same reason, FRA is also proposing to make corresponding changes to the similarly worded headings for §§ 223.13 and 223.15, below, to specify the compliance date instead.

Section 223.13 Requirements for Cabooses Built or Rebuilt Prior to July 1, 1980

The current heading for this section is "Requirements for existing cabooses." As noted above, FRA is proposing to revise the section heading to "Requirements for cabooses built or rebuilt prior to July 1, 1980" to reflect the actual compliance date for equipment subject to this section.

Section 223.15 Requirements for Passenger Cars Built or Rebuilt Prior to July 1, 1980

The current heading for this section is "Requirements for existing passenger cars." As noted above, FRA is proposing to revise the section heading to "Requirements for passenger cars built or rebuilt prior to July 1, 1980" to reflect the actual compliance date for equipment subject to this section.

Appendix A to Part 223—Certification of Glazing Materials

As discussed above, FRA proposes to revise this appendix to provide the option to use a 12-lb steel ball as an alternative to a 24-lb cinder block for large object impact testing when certifying glazing under part 223. In doing so, FRA is making miscellaneous, conforming changes to existing requirements.

In paragraph b.(6), consistent with the Volpe report, FRA proposes adjusting the width of the witness plate to account for the difference in object size between the steel ball and the cinder block for conducting large object impact testing.

Further, FRA proposes revising paragraph b.(10), containing the Type I test regimen requirements for end facing glazing locations. FRA would add the steel ball test option to paragraph b.(10)(ii), Large Object Impact, as new paragraph b.(10)(ii)(B); the existing cinder block test would be in redesignated paragraph b.(10)(ii)(A). Under paragraph b.(10)(ii)(B), a steel ball, including a ball bearing or shot put ball, weighing a minimum of 12 lbs would impact the glazing surface at an impact velocity of 62.5 fps. Since the kinetic energy of a 12-lb steel ball travelling at 62.5 fps is equivalent to the kinetic energy of a 24-lb cinder block traveling at 44 fps under the existing Type I testing method, proposed paragraph b.(10)(ii)(B) would represent an alternative but equivalent test option to the standard cinder block method for Type I testing.

In paragraphs b.(10) and (11), FRA plans to incorporate by reference ASTM C90-16a, "Standard Specification for Loadbearing Concrete Masonry Units," 2016, and ASTM C33/33M-18, "Standard Specification for Concrete Aggregates," 2018. Both specifications provide options for the precise cinder block makeup used in the large

object impact tests. ASTM C90-16a provides specifications for loadbearing concrete masonry units made from portland cement, water, and mineral aggregates with or without the inclusion of other materials. ASTM C33/33M-18 provides specifications for grading and quality of fine and coarse aggregate (other than lightweight or heavyweight aggregate) for use in concrete. The existing references in appendix A identify the ASTM specifications that were current when part 223 was issued in 1979, ASTM C33L and ASTM C90. Cinder blocks conforming to either the current specifications, or those from 1979, are suitable for the large object impact test. Because manufacturers are building cinder blocks to the current specifications, FRA proposes to incorporate the current specifications. Both standards proposed for incorporation, ASTM C90-16a and C33/C33M-18, are available to all interested parties online at https://www.astm.org. Further, FRA will maintain copies of these standards available for review at Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE, Washington, DC 20590.

Similarly, FRA proposes revising paragraph b.(11), containing the Type II test regimen requirements for side facing glazing locations. FRA would add the steel ball test option to paragraph b.(11)(ii), Large Object Impact, as new paragraph b.(11)(ii)(B); the existing cinder block test would be in redesignated paragraph b.(11)(ii)(A). Under paragraph b.(11)(ii)(B), a steel ball, including a ball bearing or shot put ball, weighing a minimum of 12 lbs would impact the glazing surface at an impact velocity of 17 fps. The kinetic energy of a 12-lb steel ball travelling at 17 fps is equivalent to the kinetic energy of a 24-lb cinder block traveling at 12 fps under the existing Type II testing method. Proposed paragraph b.(11)(ii)(B) would therefore represent an alternative but equivalent test option to the standard cinder block method for Type II testing.

Moreover, FRA proposes to revise paragraph b.(13), concerning the number of test specimens required for large object impact testing. Under revised paragraph b.(13),

use of the alternative steel ball test option in paragraphs b.(10)(ii)(B) and b.(11)(ii)(B) would require four different test specimens to be subjected to each impact test—rather than only two different test specimens required for the existing cinder block impact test. FRA proposes this change together with that proposed to the pass-fail requirements in paragraph b.(15), below, based on the Volpe Center's test regimen used during its research into the steel ball alternative, discussed above.

Under proposed paragraph b.(15), use of the alternative steel ball test option in paragraphs b.(10)(ii)(B) and b.(11)(ii)(B) would require three out of the four test specimens to pass the test for the glazing material to be found acceptable. Use of the existing cinder block test would continue to require that both glazing specimens pass the test for the glazing material to be found acceptable. The pass-fail requirement for use of the alternative steel ball test is intended to provide testing flexibility and is based on the Volpe Center's test regimen.

IV. Regulatory Impact and Notices

A. Executive Orders 12866

The proposed rule is a nonsignificant regulatory action under Executive Order 12866, "Regulatory Planning and Review." FRA made this determination by finding that the economic effects of the proposed rulemaking would not exceed the $100 million annual threshold defined by Executive Order 12866. FRA estimates this proposed rule would result in cost savings for the industry over a ten-year period, while maintaining and in some cases enhancing safety.

The proposed rulemaking seeks to amend part 223 in two substantive ways. The proposed rule would codify long-standing waivers that exclude old rail equipment from certified safety window glazing requirements provided the railroads that use this equipment comply with FRA-required operating conditions intended to maintain and, in

some cases, enhance safety. The proposed rule would also add a steel ball test option to appendix A.

FRA complied with Office of Management and Budget (OMB) Circular A-4 when accounting for benefits, costs, and cost savings relative to a baseline condition. Typically, a baseline represents a best judgement about what the world would look like in the absence of the regulatory intervention.[26] Without this proposed rule, small railroads operating rail cars under waiver equipped with uncertified glazing would continually need to apply for waivers from part 223. To estimate benefits, costs, and cost-savings, this analysis assumes a baseline where FRA's approval of these waivers resembles historical practice.

FRA generally reviews two types of waivers: (1) test or pilot waivers and (2) ongoing or long-standing waivers. Test or pilot waivers require extensive technical analysis and investigation by stakeholders when applying for and renewing them. Long-standing waivers cover more familiar and proven technology, and have previously undergone the renewal process. Renewal requests for these waivers require less effort for applicants and for FRA. For this proposed rule, FRA considers waivers that were initially granted for equipment for 10 years or longer as long-standing waivers; in other words, the equipment has operated subject to waiver for 10 years or longer. A waiver's benefits, costs, and likely net cost savings are based on industry application of technologies and procedures, which are presumably less restrictive than the underlying regulation. However, continuation of cost savings and associated regulatory relief is subject to the uncertainty regarding whether the waiver will be renewed during its periodic review. Currently, only Class III railroads operate rail equipment under waiver from part 223 that would no longer be necessary under this proposed rule. Based upon

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[26] "Circular A-4: Regulatory Analysis" (Sep. 17, 2003), available at https://obamawhitehouse.archives.gov/omb/circulars_a004_a-4. *See Section E(2) Developing a Baseline.*

historical records, FRA estimates the proposed rule would provide cost savings to 58 (8 percent) of the 753 Class III railroads.

These long-standing waivers reflect familiar uncertified glazing technologies and safe operating conditions for which FRA has granted short line railroads waiver renewals. The uncertified window glazing permitted by waivers and the FRA-required operating conditions for these waivers have been used by members of the industry for a long time and are essentially "built-in" to their operations. FRA historic inspection data indicates that the railroads have operated safely with these waivers. The continuation of these long-standing waivers is a reasonable estimation of the world without the final rule. Cost savings for these waivers are estimated as simply the reduction in renewal processing costs for the railroads and FRA.

As discussed above, the Safety Board has consistently found that, due to rising prices for materials and labor, and modifications that are necessary to adapt the window frames in the older equipment to support the increased thickness and weight of glazing in modern window designs, mandating that railroads with older equipment install certified glazing would be cost-prohibitive due to the need to remove the existing window frames and replace them with new frames that are compatible with compliant glazing. This could exceed the value of the locomotive itself. FRA expects that even if this installation took place, there would be limited benefits, which would not exceed the expected costs.

More recent waivers (*i.e.*, those approved by FRA less than 10 years ago) are subject to more extensive review and analysis. FRA may modify conditions of the waivers and impose restrictions to maintain and in some cases enhance safety. Costs for renewing more recent waivers are higher than for long-standing waivers, and the railroads must incur significant uncertainty during the process because renewal is not assured. In this analysis, FRA estimates impacts due to codifying these recent waivers as

the costs and cost-savings resulting from the underlying glazing waiver application process and safety procedures and in lieu of what is required under existing regulation.

The proposed rule would, in effect, lift the five-year waiver renewal requirement from subject small railroads, reduce window glazing manufacturers' window glazing certification costs, and eliminate the Federal Government's requirement to review and approve these waivers. FRA estimates all entities would realize total cost savings as estimated in Table A. FRA estimates there would be no costs associated with implementing the proposed rule.

Table A. Summary of Total Cost Savings over the 10-Year Period (2020 Dollars)

Entity	Undiscounted	Present Value		Annualized	
		3%	7%	3%	7%
Railroad (Waiver Submissions)	$44,000	$37,000	$30,000	$4,300	$4,200
Manufacturer (Steel Ball Option)	$74,800	$63,800	$52,500	$7,500	$7,500
Government (Review Savings)	$1,000,200	$844,000	$685,000	$99,000	$97,500
Total Cost Savings	$1,119,000	$944,800	$767,500	$110,800	$109,300

Railroad Cost Savings

In 1979, FRA issued part 223 and generally established minimum safety requirements for glazing materials in the windows of locomotives, passenger cars, and cabooses. FRA has traditionally granted waiver requests to small railroads that operate such vehicles in existence at the time the regulation was promulgated at speeds up to 30 mph on rail tracks located in areas where railroad reports and FRA observations, as well as police records, show little risk of objects, such as cinder blocks and bullets, striking rail equipment. Once initial waiver requests are approved, recipients must resubmit waiver requests to FRA every five years to continue to operate the vehicles. During the waiver approval process, FRA field inspectors verify safe conditions and contact local

police if appropriate.[27] FRA historical records of the approval process confirm that from 1998 to April 2020 no railroad operating under waiver from part 223's requirements has reported any incident resulting from use of windows not conforming to part 223's requirements. Based on this documented safety history and FRA's standard practice for evaluating waiver requests,[28] FRA is confident that codifying window glazing waivers serves the public interest by providing small railroads permanent regulatory relief while preserving safety on the general railroad system of transportation. The proposed rule also adds a steel ball test option to the window glazing certification process. FRA expects this amendment would reduce glazing certification costs and encourage technical innovation among manufacturers.

Currently, Class III railroads operate rolling stock under 68 waivers from part 223. These railroads are required to resubmit waivers every year 5 years. The number of waivers submitted to FRA each year would vary over the next 10 years. For example, FRA expects railroads would submit 8 waivers in 2021 (4 originated in 2001, 1 originated in 2006, and 3 originated in 2011). In 2022, a total of 11 waivers would be submitted, which originated in 2002, 2007, 2012, and 2017. Each railroad operating under waiver would submit requests for all waivers granted to them twice over the next 10 years so that a total of 136 waiver renewals would be submitted over the period.

FRA calculated the railroad cost savings in the table below based upon the following inputs.[29]

- Railroad administrative burdened[30] wage rate is $77.47 per hour.[31]

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[27] District inspectors verify safe conditions with the police if they find any evidence window glazing has been damaged or replaced.
[28] Standard operating procedures include periodic updates of the FRA Motive Power and Equipment Compliance Manual, which would be expected with the passage of this rule.
[29] Inputs are based on expertise drawn from FRA's Motive Power and Equipment Division unless otherwise noted.
[30] The "burdened" wage rate includes fringe and overhead benefits.
[31] Source: Surface Transportation Board, 2019, professional and administrative employees, group #200; burdened wage rate = $44.27 * 1.75 benefits rate = $77.47.

- Each railroad waiver submission requires 4 hours of railroad administrative labor.
- Copying and mailing costs total $10 per waiver.
- Total cost per waiver equals $319.88.[32]

Table B. Railroad Cost Savings by Year

		Discount Rate		
YEAR	Number of Waivers	Undiscounted	3%	7%
2021	8	$2,559	$2,485	$2,392
2022	11	$3,519	$3,317	$3,073
2023	14	$4,478	$4,098	$3,656
2024	18	$5,758	$5,116	$4,393
2025	17	$5,438	$4,691	$3,877
2026	8	$2,559	$2,143	$1,705
2027	11	$3,519	$2,861	$2,191
2028	14	$4,478	$3,535	$2,607
2029	18	$5,758	$4,413	$3,132
2030	17	$5,438	$4,046	$2,764
Total	136	$43,500	$37,000	$30,000
		Annualized	$4,300	$4,200

Based upon these inputs, under the proposed rule the 58 small railroads operating under 68 glazing-related waivers would realize approximately $320 in savings per avoided waiver in current dollars.

Manufacturer Cost Savings

[32] Total costs per waiver = 4*$77.47+$10=$319.88.

FRA expects the option to use a steel ball in lieu of a cinder block in the railroad window glazing certification process to reduce manufacturers' technical development costs and encourage technical innovation. Appendix A includes Type I and Type II large object impact tests. These tests require the rectangular edge of an 8" by 8" by 16" cinder block weighing 24 lbs to strike a glazed window under specified conditions without penetrating the back side of the glass. Partial penetration of the front side of the glass does not constitute a failure. Cinder blocks meeting part 223 specified parameters are no longer manufactured. Materials engineers must customize four currently available cinder blocks requiring two hours of labor, increasing current glazing certification costs beyond what was anticipated during the original rulemaking. The Volpe Center conducted research verifying a 12-lb steel ball can achieve the same kinetic energy as the cinder block. In addition, the steel ball can be used repeatedly due to its symmetry and surface tension but the cinder block can only be used once because its rectangular edge is damaged beyond repair during each test use.

The following assumptions were made to estimate the manufacturers' labor and material cost savings due to the proposed changes to the railroad vehicle glazing certification process.[33] FRA requests public comments on the assumptions used in this analysis.

- Five manufacturers across the globe develop railroad vehicle glazing; three are located within the U.S. and two are foreign manufacturers.
- FRA assumes that all glazing manufacturers will make use of the steel ball option.
- FRA expects each firm will conduct five tests per year and save approximately $500 per test in current 2020 dollars.
- The total manufacturing cost savings table below is developed for the three U.S. manufacturing firms and assumes 15 tests are conducted per year.

[33] Assumptions are based on expertise from FRA's Motive Power and Equipment Division.

- As the cinder block is damaged during each pass of the test, two cinder blocks are required at a cost of $1.50 apiece and $6 in total. Each cinder block test requires 10 labor hours, *e.g.*, 2 hours to customize 4 cinder blocks and 8 hours to run the cinder block test. Two additional cinder blocks were included in the analysis to ensure that extra cinder blocks were available if the first test was failed.
- Each steel ball costs $75. This analysis assumes each U.S. manufacturer will purchase one steel ball at the beginning of the first year of analysis period. These one-time costs are subtracted from the 2021 cost savings shown in Table D. Steel ball costs are not included in Table C per test cost savings. FRA assumes the steel ball will be used after 2030.
- Materials engineers conduct the certification tests at a burdened hourly wage of $82.[34]
- FRA recognizes the NPRM would result in unquantified environmental cost savings as glazing manufacturers reduce the purchase and landfill disposal of cinder blocks. FRA lacks sufficient data to quantify these costs and asks for public comment.

Table C. Manufacturer Cost Savings

Expense	Large Object Costs per Test	Labor Hours per Test	Labor Costs per Test	Total Costs per Test	Large Object Costs 15 Tests	Labor Costs 15 Tests	Total Costs Per Year
Cinder Block	$6	10	$824	$830	$90	$12,353	$12,443[35]
Steel Ball After First Year	$0	4	$330	$330	$0	$4,941	$4,941[36]

[34] Current materials engineer wage rate = $47.06. Burdened rate = 1.75*$47.06 = $82.36. Source: https://www.bls.gov/oes/current/oes172131.htm.
[35] Total cinder block tests cost per year = 15*($6+$823.55) where $6 is the per test cinder block cost and $823.55 is the per test labor cost. It is assumed the 3 U.S. firms conduct a total of 15 test per year.
[36] The steel ball costs per test include only 4 hours of labor and = 4*82.36 or $329.42. Fifteen tests per year = 15*$329.42=$4,941.

Burdened Hourly Wage Rate	$82						
					Cost Savings per Year		$7,500
					Cost Savings per Test		$500

In summary, all three U.S. window glazing manufacturers and the two foreign manufacturers are expected to save $500 per test by exercising the steel ball option. The following table shows the 10-year cost savings for all three U.S. manufacturers.

Table D. Manufacturer Cost Savings by Year

	Number		Present Value	
YEAR	of Tests	Undiscounted	3%	7%
2021	15	$7,277	$7,065	$6,801
2022	15	$7,502	$7,071	$6,552
2023	15	$7,502	$6,865	$6,124
2024	15	$7,502	$6,665	$5,723
2025	15	$7,502	$6,471	$5,349
2026	15	$7,502	$6,283	$4,999
2027	15	$7,502	$6,100	$4,672
2028	15	$7,502	$5,922	$4,366
2029	15	$7,502	$5,750	$4,081
2030	15	$7,502	$5,582	$3,814
Total	150	$74,800	$63,800	$52,500
Annualized			$7,500	$7,500

Federal Government Cost Savings

The tables below estimate the Federal Government cost savings expected from this proposed rule. FRA would no longer receive numerous petitions from small

railroads requesting waiver from compliance with the window glazing requirements, which would save time and expense FRA previously spent on the waiver review and decision process. Specifically, as noted above, FRA currently oversees 68 glazing-related waivers, subject to renewal every five years, and as a result, FRA receives approximately one glazing waiver renewal request every month. As part of the waiver process, an FRA inspector spends one to two days investigating each glazing waiver renewal request and reporting the findings. In addition, an FRA subject matter expert spends one to two days reviewing the inspector's report and drafting a recommendation memorandum to the Safety Board and a notice to publish in the *Federal Register* for each waiver renewal request.

FRA estimates the cost savings from eliminating one railroad window glazing waiver review and decision is approximately $7,400 at the burdened wage rate. FRA cost savings estimates are based on the reduction of labor hours at the 2020 Office of Personnel Management (OPM) pay grade levels as shown below.[37] Hours were considered at the burdened wage rate by multiplying the actual wage rate by 175 percent.

FRA's waiver review and decision typically require contributions from employees earning salaries at General Schedule (GS) pay grades 12, 14, and 15, and employees earning Senior Executive Service (SES) salaries. Table E shows the hours and wage rates for Government employees reviewing and issuing decisions for part 223 waiver requests.

Table E. FRA Waiver Review Wage Rates by General Schedule Pay Grades

[37] OPM general wage rates are listed here: GS 12 District Staff from Rest of the US https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2020/RUS_h.pdf; GS 12, 13, 15 DOT Headquarters Staff from DC Metropolitan Area: https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2020/DCB_h.pdf; SES from Mid-Level III: https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2020/EX.pdf.

		Burdened Wage Rate (Wage*1.75)	Hours	Total Unburden	Total Burden
GS-12 (RUS)	$41.66	$72.91	12	$500	$875
GS-12 (DCB)	$46.88	$82.04	4	$188	$328
GS-14 (DCB)	$65.88	$115.29	36	$2,372	$4,150
GS-15 (DCB)	$77.49	$135.61	8	$620	$1,085
SES	$87.26	$152.71	6	$524	$916
Total Cost per Waiver				$4,200	$7,400

Table F provides the yearly cost savings of eliminating the Federal Government's burden of reviewing 136 waivers over the next 10 years.

Table F. Government Administrative Cost Savings by Year

			Discount Rate	
YEAR	Number of Waivers	Burdened Wage Rate Undiscounted	3%	7%
1	8	$58,836	$57,123	$54,987
2	11	$80,900	$76,256	$70,661
3	14	$102,964	$94,226	$84,049
4	18	$132,382	$117,620	$100,994
5	17	$125,027	$107,850	$89,143
6	8	$58,836	$49,275	$39,205
7	11	$80,900	$65,779	$50,380
8	14	$102,964	$81,280	$59,926
9	18	$132,382	$101,460	$72,007
10	17	$125,027	$93,032	$63,558
Total	136	$1,000,219	$844,000	$685,000
		Annualized	$99,000	$97,500

In addition, codifying the active glazing waivers would allow FRA inspectors to perform other essential duties, namely their typical inspection duties, rather than dedicating time to investigating glazing waiver renewal requests, and would also allow headquarters staff to spend their time on other issues that may have a larger impact on maintaining and improving safety.

B. Regulatory Flexibility Act and Executive Order 13272

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 *et seq.*) and Executive Order 13272, "Proper Consideration of Small Entities in Agency Rulemaking" (67 FR 53461 (Aug. 16, 2002)), require agency review of proposed and final rules to assess their impacts on small entities. An agency must prepare an Initial Regulatory Flexibility Analysis (IRFA) unless it determines and certifies that a rule, if promulgated, would not have a significant economic impact on a substantial number of small entities. FRA has not determined whether this proposed rule would have a significant economic impact on a substantial number of small entities, and has therefore prepared this IRFA. FRA seeks comment from small entities on the economic impacts of this proposed rule.

1. Reasons for Considering Agency Action

FRA is proposing this rulemaking to relieve the burden on the railroad industry by codifying waivers from part 223 for small railroads operating rail equipment with uncertified window glazing. The proposed rule would also add a steel ball option to comply with the glazing certification requirements for large object impact testing. FRA's proposed changes to part 223 are expected to result in cost savings for railroads, the Government, and window glazing manufacturers.

Without this proposed rule, railroads would continue to submit waiver renewal requests from the part 223 glazing requirements every five years. Manufacturers would continue using a customized cinder block to certify new window glazing materials and not be able to reduce production costs by using the steel ball option. The alternative, not

issuing the proposed rule, would continue to burden small railroads with unnecessarily high glazing certification costs and both the small railroads and the Federal Government with unnecessary administrative costs.

2. A Succinct Statement of the Objectives of, and Legal Basis for, the Proposed Rule

The objective of this proposed rule is to reduce the regulatory burden on the railroad industry while maintaining and in some cases enhancing the existing level of safety, by excluding railroads operating vehicles at speeds not exceeding 30 mph built or rebuilt before July 1, 1980, and operated in low risk areas, from part 223 certified window glazing requirements. The proposed rule would also reduce window glazing manufacturers' production costs by adding the steel ball large object impact test option to certify glazing. In addition, FRA expects this rule would reduce the regulatory and administrative burden on regulated entities by eliminating the need to renew waivers every five years.

The Secretary of Transportation has broad statutory authority to "prescribe regulations and issue orders for every area of railroad safety" under 49 U.S.C. 20103, including window glazing regulated in part 223.

3. A Description of and, Where Feasible, an Estimate of the Number of Small Entities to Which the Proposed Rule Would Apply

The Regulatory Flexibility Act of 1980 requires a review of proposed and final rules to assess their impact on small entities, unless the Secretary certifies that the rule would not have a significant economic impact on a substantial number of small entities. "Small entity" is defined in 5 U.S.C. 601 as a small business concern that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has authority to regulate issues related to small businesses, and stipulates in its size standards that a "small entity" in the railroad industry

includes a for-profit "line-haul railroad" that has fewer than 1,500 employees and a "short line railroad" with fewer than 500 employees.[38]

Federal agencies may adopt their own size standards for small entities in consultation with SBA and in conjunction with public comment. Under that authority, FRA has published a final statement of agency policy that formally establishes "small entities" or "small businesses" as railroads, contractors, and hazardous materials shippers that meet the revenue requirements of a Class III railroad as set forth in 49 CFR part 1201, General Instructions section 1-1, which is $20 million or less in inflation-adjusted annual revenues; and commuter railroads or small governmental jurisdictions that serve populations of 50,000 or less.[39] The $20 million limit is based on the Surface Transportation Board's revenue threshold for a Class III railroad carrier. Railroad revenue is adjusted for inflation by applying a revenue deflator formula in accordance with 49 CFR part 1201, General Instructions section 1-1. The current threshold is $40.4 million.[40] FRA is using this definition for the proposed rule. FRA estimates this proposed rule directly affects the 58 Class III railroads currently operating under one or more waivers. The proposed rulemaking would relieve these railroads of the labor costs and the uncertainty associated with the waiver submission process. FRA estimates three U.S. glazing manufacturers would develop and test new certifiable glazing materials each year during the analysis period. FRA expects these manufacturers would benefit from lower production costs due to the flexibility added to the certification test requirements.

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[38] "Size Eligibility Provisions and Standards," 13 CFR part 121, subpart A.

[39] 68 FR 24891 (May 9, 2003) (codified at appendix C to 49 CFR part 209).

[40] The Class III railroad revenue threshold is $40,384,263 or less, for 2019. (The Class II railroad threshold is between $40,384,263 and $504,803,294; and the Class I railroad threshold is $504,803,294 or more.) *See* Surface Transportation Board Decision, Docket No, EP 748, Indexing the Annual Operating Revenues of Railroads, Decided June 4, 2020. https://prod.stb.gov/reports-data/economic-data/railroad-revenue-deflator-factors/.

However, each of these manufacturers employs more than 1,000 persons, the SBA[41] benchmark for large businesses by defined by the SBA.

4. A Description of the Projected Reporting, Recordkeeping, and Other Compliance Requirements of the Rule, Including an Estimate of the Class of Small Entities That Will be Subject to the Requirements and the Type of Professional Skill Necessary for Preparation of the Report or Record

The proposed rule would eliminate the need for certain railroads to follow FRA's waiver process to be excluded from part 223 window glazing requirements. FRA is confident that all railroads currently operating under these part 223 waivers are small entities. This proposed rule would reduce the regulatory costs and hourly burdens on these railroads; the proposed changes would result in a positive economic impact on those railroads.

To estimate the cost savings for small entities, FRA used its historic records to identify each of the 58 small entities currently operating under one or more waivers and their 5-year resubmission dates. FRA assumed each waiver cost the railroad industry $320 and included 4 hours of required labor at a burdened rate of $77.47 and mailing costs of $10. Each of the affected railroads would submit 2 waivers over the 10-year analysis period or a total 136 waivers. Total cost to the industry is estimated at approximately $37,000 or $30,000, when discounted at rates of 3 and 7 percent. Each year, the small railroad industry would be relieved of $4,300 or $4,200 at the same rates. These railroads would also be relieved of the uncertainty imposed during the renewal process.

5. Identification, to the Extent Practicable, of All Relevant Federal Rules That May Duplicate, Overlap, or Conflict with the Proposed Rule

FRA is not aware of any relevant Federal rule that duplicates, overlaps with, or

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[41] North American Industry Classification System (NAICS) Code 327211 signifies the Flat Glass and Glazing Manufacturing Firms that would be affected by this proposal. Per SBA, any firm under NAICS code 327211 that employs more than 1,000 employees cannot qualify as a small business. *See* U.S. Small Business Administration, Table of Small Business Size Standards Matched to North American Industry Classification Codes, effective January 1, 2017. https://www.sba.gov/sites/default/files/2019-08/SBA%20Table%20of%20Size%20Standards_Effective%20Aug%2019%2C%202019.pdf.

conflicts with the proposed rule.

6. A Description of Significant Alternatives to the Rule

FRA is proposing this rulemaking to relieve the burden on industry by codifying long-standing window glazing waivers and reducing manufacturing costs by adding a steel ball large object testing option to the glazing certification testing requirements. The main alternative to this rulemaking would be to maintain and, in some cases, enhance safety.

In the absence of this proposed rule, affected railroads would continue to submit waiver renewals every five years under part 223. Manufacturers would continue using a customized cinder block to certify new window glazing materials as they would not be able to reduce production costs by using the steel ball option. The alternative of not issuing the proposed rule would be to continue to burden small railroads with unnecessarily high glazing certification costs and both the small railroads and the Federal Government with unnecessary administrative costs.

C. Paperwork Reduction Act

FRA is submitting the information collection requirements in this proposed rule to OMB for approval under the Paperwork Reduction Act of 1995.[42] Please note that any revised requirements, as proposed in this NPRM, are marked by asterisks (*) in the table below. The sections that contain the proposed and current information collection requirements under OMB Control No. 2130-0525 and the estimated time to fulfill each requirement are as follows:

CFR Section	Respondent universe	Total annual responses (A)	Average time per response (B)	Total annual burden hours (C) = A * B	Total cost equivalent (D) = C * wage rate[43]

[42] 44 U.S.C. 3501 *et seq.*

[43] The dollar equivalent cost is derived from the Surface Transportation Board's 2020 Full Year Wage A&B data series using the appropriate employee group hourly wage rate that includes a 75-percent overhead charge.

223.3—Application—Locomotives, passenger cars, and cabooses built after 1945 used only for excursion, educational, recreational, or private transportation purposes.	704 railroads	400 marked tools (small hammers with instructions)	30 minutes	200.00 hours	$11,978.00
223.11(c)—Requirements for locomotives built or rebuilt prior to July 1, 1980, equipped with certified glazing in all locomotive cab windows (*Note: Revised requirement.*)	The proposed rule would eliminate the need for railroads to submit waiver petitions (and repeated extensions of those waivers every 5 years) from part 223 for certain older railroad equipment, eliminate the Federal Government's need to review and approve the waiver petitions and extension requests				
—(d)(1) Locomotive placed in designated service due to a damaged or broken cab window—Stenciled "Designated Service—DO NOT OCCUPY"	704 railroads	15 stencilings	3 minutes	.75 hour	$44.92
—(d)(2) Locomotives removed from service until broken or damaged windows are replaced with certified glazing	Glazing certification for locomotive replacement windows is done at the time of manufacturing. Consequently, there is no additional burden associated with this requirement.				
223.13(c)—Requirements for cabooses built or rebuilt prior to July 1, 1980, equipped with certified glazing in all windows (*Note: Revised requirement.*)	The proposed rule would eliminate the need for railroads to submit waiver petitions (and repeated extensions of those waivers every 5 years) from part 223 for certain older railroad equipment, eliminate the Federal Government's need to review and approve the waiver petitions and extension requests				
—(d) Cabooses removed from service until broken or damaged windows are replaced with certified glazing	Glazing certification for caboose replacement windows is done at the time of manufacturing. Consequently, there is no additional burden associated with this requirement.				
223.15(c)—Requirements for passenger cars built or rebuilt prior to July 1, 1980, equipped with certified glazing in all windows plus four emergency windows (*Note: Revised requirement. For those passenger cars operating above Class III speed would need still need to submit a waiver. For those operating below Class III speed the proposed rule would eliminate the need for the passenger railroads to submit waiver petitions.*)	704 railroads	1 renewal waiver	4 hours	4.00 hours	$460.96
—(d) Passenger cars removed from service until broken/damaged windows are replaced with certified glazing	Glazing certification for passenger car replacement windows is done at the time of manufacturing. Consequently, there is no additional burden associated with this requirement.				

Appendix A—(b)(16)—Certification of Glazing Materials—Manufacturers to certify in writing that glazing material meets the requirements of this section	5 manufacturers	10 certifications	30 minutes	5.00 hours	$387.20
—(c) Identification and marking of each unit of glazing material	5 manufacturers	25,000 marked pieces	480 pieces per hour	52.08 hours	$3,119.07
Total	704 railroads + 5 manufacturers	25,426 responses	N/A	262 hours	$15,990

All estimates include the time for reviewing instructions; searching existing data sources; gathering or maintaining the needed data; and reviewing the information. Pursuant to 44 U.S.C. 3506(c)(2)(B), FRA solicits comments concerning: Whether these information collection requirements are necessary for the proper performance of the functions of FRA, including whether the information has practical utility; the accuracy of FRA's estimates of the burden of the information collection requirements; the quality, utility, and clarity of the information to be collected; and whether the burden of collection of information on those who are to respond, including through the use of automated collection techniques or other forms of information technology, may be minimized. For information or a copy of the paperwork package submitted to OMB, contact Ms. Hodan Wells, Information Collection Clearance Officer, at 202-493-0440. Organizations and individuals desiring to submit comments on the collection of information requirements should direct them via email to Ms. Wells at Hodan.Wells@dot.gov.

OMB is required to make a decision concerning the collection of information requirements contained in this rule between 30 and 60 days after publication of this document in the Federal Register. Therefore, a comment to OMB is best assured of having its full effect if OMB receives it within 30 days of publication. FRA is not authorized to impose a penalty on persons for violating information collection requirements that do not display a current OMB control number, if required. FRA

intends to obtain current OMB control numbers for any new information collection requirements resulting from this rulemaking action prior to the effective date of the final rule. The OMB control number, when assigned, will be announced by separate notice in the Federal Register.

D. Federalism Implications

Executive Order 13132, Federalism,[44] requires FRA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" are defined in the Executive order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, the agency may not issue a regulation with federalism implications that imposes substantial direct compliance costs and that is not required by statute, unless the Federal Government provides the funds necessary to pay the direct compliance costs incurred by State and local governments or the agency consults with State and local government officials early in the process of developing the regulation. Where a regulation has federalism implications and preempts State law, the agency seeks to consult with State and local officials in the process of developing the regulation.

FRA has analyzed this proposed rule in accordance with the principles and criteria contained in Executive Order 13132. FRA has determined that this proposed rule has no federalism implications, other than the possible preemption of State laws under 49 U.S.C. 20106. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply, and preparation of a federalism summary impact statement for the proposed rule is not required.

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[44] 64 FR 43255 (Aug. 10, 1999).

E. International Trade Impact Assessment

The Trade Agreements Act of 1979 prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. This proposed rule is not expected to affect trade opportunities for U.S. firms doing business overseas or for foreign firms doing business in the United States.

F. Environmental Impact

FRA has evaluated this proposed rule consistent with the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), the Council of Environmental Quality's NEPA implementing regulations at 40 CFR parts 1500–1508, and FRA's NEPA implementing regulations at 23 CFR part 771 and determined that it is categorically excluded from environmental review and therefore does not require the preparation of an environmental assessment (EA) or environmental impact statement (EIS). Categorical exclusions (CEs) are actions identified in an agency's NEPA implementing regulations that do not normally have a significant impact on the environment and therefore do not require either an EA or EIS.[45] Specifically, FRA has determined that this proposed rule is categorically excluded from detailed environmental review pursuant to 23 CFR 771.116(c)(15), "[p]romulgation of rules, the issuance of policy statements, the waiver or modification of existing regulatory requirements, or discretionary approvals that do not result in significantly increased emissions of air or water pollutants or noise."

The main purpose of this rulemaking is to revise FRA's Safety Glazing Standards to maintain and in some cases enhance safety, while reducing unnecessary costs and provide regulatory flexibility while. This rule would not directly or indirectly impact any

[45] 40 CFR 1508.4.

environmental resources and would not result in significantly increased emissions of air or water pollutants or noise. In analyzing the applicability of a CE, FRA must also consider whether unusual circumstances are present that would warrant a more detailed environmental review.[46] FRA has concluded that no such unusual circumstances exist with respect to this proposed rule and it meets the requirements for categorical exclusion under 23 CFR 771.116(c)(15).

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, FRA has determined this undertaking has no potential to affect historic properties.[47] FRA has also determined that this rulemaking does not approve a project resulting in a use of a resource protected by Section 4(f).[48]

G. Executive Order 12898 (Environmental Justice)

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and DOT Order 5610.2b[49] require DOT agencies to achieve environmental justice as part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects, of their programs, policies, and activities on minority populations and low-income populations. The DOT Order instructs DOT agencies to address compliance with Executive Order 12898 and requirements within the DOT Order in rulemaking activities, as appropriate, and also requires consideration of the benefits of transportation programs, policies, and other activities where minority populations and low-income populations benefit, at a minimum, to the same level as the general population as a whole when determining impacts on minority and low-income populations. FRA has evaluated this proposed rule

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[46] 23 CFR 771.116(b).
[47] *See* 16 U.S.C. 470.
[48] *See* Department of Transportation Act of 1966, as amended (Pub. L. 89-670, 80 Stat. 931); 49 U.S.C. 303.
[49] Available at https://www.transportation.gov/regulations/dot-order-56102b-department-transportation-actions-address-environmental-justice.

under Executive Order 12898 and the DOT Order and has determined it would not cause disproportionately high and adverse human health and environmental effects on minority populations or low-income populations.

H. Unfunded Mandates Reform Act of 1995

Under section 201 of the Unfunded Mandates Reform Act of 1995,[50] each Federal agency "shall, unless otherwise prohibited by law, assess the effects of Federal regulatory actions on State, local, and tribal governments, and the private sector (other than to the extent that such regulations incorporate requirements specifically set forth in law)." Section 202 of the Act (2 U.S.C. 1532) further requires that "before promulgating any general notice of proposed rulemaking that is likely to result in promulgation of any rule that includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more (adjusted annually for inflation) in any 1 year, and before promulgating any final rule for which a general notice of proposed rulemaking was published, the agency shall prepare a written statement" detailing the effect on State, local, and tribal governments and the private sector. This proposed rule would not result in the expenditure, in the aggregate, of $100,000,000 or more (as adjusted annually for inflation) in any one year, and thus preparation of such a statement is not required.

I. Energy Impact

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," requires Federal agencies to prepare a Statement of Energy Effects for any "significant energy action."[51] FRA evaluated this proposed rule under Executive Order 13211 and determined that this regulatory action is not a "significant energy action" within the meaning of Executive Order 13211.

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[50] Pub. L. 104-4, 2 U.S.C. 1531.
[51] 66 FR 28355 (May 22, 2001).

J. Privacy Act Statement

In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, to www.regulations.gov, as described in the system of records notice, DOT/ALL-14 FDMS, accessible through www.dot.gov/privacy. To facilitate comment tracking and response, we encourage commenters to provide their name, or the name of their organization; however, submission of names is completely optional. Whether or not commenters identify themselves, all timely comments will be fully considered. If you wish to provide comments containing proprietary or confidential information, please contact the agency for alternate submission instructions.

K. Analysis Under 1 CFR Part 51

As required by 1 CFR 51.5, FRA has summarized the standards it is incorporating by reference in the section-by-section analysis in this preamble. These standards summarized herein are reasonably available to all interested parties for inspection. Copies can be obtained from the ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA, 19428-2959, https://www.astm.org. Copies are also available for inspection at the Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE, Washington, DC 20590.

List of Subjects in 49 CFR Part 223

Glazing standards, Penalties, Incorporation by reference, Railroad safety, Reporting and recordkeeping requirements.

The Proposed Rule

For the reasons discussed in the preamble, FRA proposes to amend part 223 of title 49, Code of Federal Regulations, as follows:

PART 223—SAFETY GLAZNG STANDARDS—LOCOMOTIVES, PASSENGER CARS AND CABOOSES

1. The authority citation for part 223 continues to read as follows:

Authority: 49 U.S.C. 20102-20103, 20133, 20701-20702, 21301-21302, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

2. Amend § 223.3 by:

a. Removing the semicolon at the end of paragraph (b)(1) and adding a period in its place.

b. Adding paragraph (b)(5).

The addition reads as follows:

§ 223.3 Application.

* * * * *

(b) * * *

(5) Locomotives, cabooses, and passenger cars built or rebuilt prior to July 1, 1980, that are operated at speeds not exceeding 30 mph, and used only where the risk of propelled or fouling objects striking the equipment is low. Risk is presumed low, unless the railroad operating the equipment has knowledge, or FRA makes a showing, that specific risk factors exist. Risk factors include reported incidents of propelled or fouling objects striking rail equipment, or infrastructure conditions or other operating environment conditions that have led or are likely to lead to objects striking rail equipment in operation.

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3. Amend § 223.9 by revising the section heading to read as follows:

§ 223.9 Requirements for equipment built or rebuilt after June 30, 1980.

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4. Amend § 223.11 by revising the section heading to read as follows:

§ 223.11 Requirements for locomotives built or rebuilt prior to July 1, 1980.

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5. Amend § 223.13 by revising the section heading to read as follows:

§ 223.13 Requirements for cabooses built or rebuilt prior to July 1, 1980.

* * * * *

6. Amend § 223.15 by revising the section heading to read as follows:

§ 223.15 Requirements for passenger cars built or rebuilt prior to July 1, 1980.

* * * * *

7. Amend appendix A to part 223 by revising paragraphs b.(6), (10), (11), (13), and (15) and adding paragraph d. to read as follows:

Appendix A to Part 223—Certification of Glazing Materials

* * * * *

b. * * *

(6) The Witness Plate shall be an unbacked sheet of maximum 0.006 inch, alloy 1100 temper O, aluminum stretched within the perimeter of a suitable frame to provide a taut surface. If a steel ball is used for Large Object Impact testing, the Witness Plate shall be an unbacked sheet of maximum 0.002 inch, alloy 1145 temper H19 or equivalent, aluminum stretched within the perimeter of a suitable frame to provide a taut surface.

* * * * *

(10) The Test Specimen for glazing material that is intended for use in end facing glazing locations shall be subjected to a Type I test regimen consisting of the following tests:

(i) Ballistic Impact: A standard 22 caliber long rifle lead bullet of 40 grains in weight impacts at a minimum velocity of 960 feet per second.

(ii) Large Object Impact:

(A) A cinder block weighing a minimum of 24 lbs with dimensions of 8 inches by 8 inches by 16 inches nominally impacts the glazing surface at the corner of the block at

a minimum velocity of 44 feet per second. The cinder block must be of composition referenced in American Society for Testing and Materials (ASTM) Specification C33/C33M-18 or ASTM C90-16a; or

(B) A steel ball (e.g., ball bearing or shot put) weighing a minimum of 12 lbs impacts the glazing surface at a minimum velocity of 62.5 feet per second.

(11) The Test Specimen for glazing material that is intended for use only in side facing glazing locations shall be subjected to a Type II test regimen consisting of the following tests:

(i) Ballistic Impact: A standard 22 caliber long rifle lead bullet of 40 grains in weight impacts at a minimum velocity of 960 feet per second.

(ii) Large Object Impact:

(A) A cinder block weighting a minimum of 24 lbs with dimensions of 8 inches by 8 inches by 16 inches nominally impacts the glazing surface at the corner of the block at a minimum velocity of 12 feet per second. The cinder block must be of the composition referenced in ASTM C33/C33M-18 or ASTM C90-16a; or

(B) A solid steel ball (e.g., ball bearing or shot put) weighing a minimum of 12 lbs impacts the glazing surface at a minimum velocity of 17 feet per second.

* * * * *

(13) Except as provided in paragraphs b.(10)(ii)(B) and b.(11)(ii)(B) of this appendix, two different test specimens must be subjected to the large object impact portion of the tests. For purposes of paragraphs b.(10)(ii)(B) and b.(11)(ii)(B), four different test specimens shall be subjected to each impact test.

* * * * *

(15) Except as provided in paragraphs b.(10)(ii)(B) and b.(11)(ii)(B) of this appendix, test specimens must consecutively pass the required number of tests at the required minimum velocities. Individual tests resulting in failures at greater than the

required minimum velocities may be repeated but a failure of an individual test at less than the minimum velocity shall result in termination of the total test and failure of the material. For purposes of paragraphs b.(10)(ii)(B) and b.(11)(ii)(B), three out of four test specimens must pass the test for the glazing material to be acceptable. Individual tests resulting in a failure at velocities above the prescribed range may be repeated.

* * * * *

d. Incorporation by Reference

Certain material is incorporated by reference into this appendix with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved material is available for inspection at the FRA and the National Archives and Records Administration (NARA). Contact FRA at: Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE, Washington, DC 20590; phone: (202) 493–6052; email: FRALegal@dot.gov. For information on the availability of this material at NARA, email fr.inspection@nara.gov or go to www.archives.gov/federal-register/cfr/ibr-locations.html. The material may be obtained from the following source(s) in this paragraph d.

(1) ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428–2959 phone: (610) 832-9585; www.astm.org.

(i) ASTM C90-16a, "Standard Specification for Loadbearing Concrete Masonry Units," 2016.

(ii) ASTM C33/C33M-18, "Standard Specification for Concrete Aggregates," 2018.

(2) [Reserved]

Issued in Washington, D.C.

Amitabha Bose,
Administrator.

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